CLAIMS

What is claimed is:

1. A method for assembling a medical device comprising:

providing a first article of a polymeric material;

providing a second article of a polymeric material;

contacting the first article with the second article along an interface area; and

exposing the first article and the second article to a specific portion of the infrared spectrum where the polymeric material of the first article and the polymeric material of the second article absorb infrared energy in order to generate sufficient heat to create a bond between the first article and the second article.

2. The method of claim 1, further comprising the step of:

providing a shield which fits over a portion of the interface area, the shield allowing infrared exposure to reach the interface area while protecting a non-bonding area.

3. The method of claim 2, wherein the shield comprises polytetrafluoroethylene.

4. The method of claim 1, wherein the first article is a medical housing and the second article is a medical tubing.

5. The method of claim 1, wherein the first article is a medical tubing and the second article is a medical tubing.

6. The method of claim 1, wherein the first article is a film and the second article is a flanged port.

7. The method of claim 1, wherein the first article is a sealed container and the second article is a flanged port.

8. The method of claim 7, wherein the sealed container is filled with a solution.

9. The method of claim 8, wherein the solution is a medical solution.

10. A medical device produced by the method of claim 1.

11. A method for assembling a medical device comprising:

providing a first article of a polymeric material;

providing a second article of a polymeric material;

attaching the first article to the second article along an interface area; and

exposing either the first or the second article to a specific portion of the infrared spectrum where the polymeric material of the first article or the polymeric material of the second article absorb infrared energy in order to generate sufficient heat to create a bond between the first and the second article.

12. The method of claim 11, further comprising the step of:

providing a shield which fits over a portion of the interface area, the shield allowing infrared exposure to reach the interface area while protecting a non-bonding area.

13. The method of claim 12, wherein the shield comprises polytetrafluoroethylene.

14. The method of claim 11, wherein the first article is a medical housing and the second article is a medical tubing.

15. The method of claim 11, wherein the first article is a medical tubing and the second article is a medical tubing.

16. The method of claim 11, wherein the first article is a film and the second article is a flanged port.

17. The method of claim 11, wherein the first article is a sealed container and the second article is a flanged port.

18. The method of claim 17, wherein the sealed container is filled with a solution.

19. The method of claim 18, wherein the solution is a medical solution.

20. A medical device produced by the method of claim 11.

21. A method for assembling a medical device comprising the steps of:

providing a first article of a polymeric material;

providing a second article of a polymeric material;

applying an infrared absorbing pigment to one of the first article or the second article to define an interface area;

contacting the first article with the second article along the interface area; and

bonding the first article to the second article along the interface area using infrared exposure.

22. The method of claim 21, wherein the infrared absorbing pigment comprises carbon black.

23. The method of claim 21, wherein the infrared absorbing pigment comprises activated charcoal.

24. The method of claim 21, wherein the infrared absorbing pigment is blended into the polymeric material of the first article or the second article.

25. The method of claim 21, wherein the infrared absorbing pigment is printed on the first article or the second article.

26. The method of claim 21, wherein the infrared absorbing pigment is placed on a first portion of a surface of the first or second article in a first concentration and in a second portion of the surface in a second concentration lower than the first concentration.

27. The method of claim 26, further comprising the step of applying a first infrared exposure to the first portion of the surface to create a seal.

28. The method of claim 27, further comprising the step of applying a second infrared exposure higher than the first infrared exposure to the second portion of the surface to create a second seal.

29. The method of claim 21, wherein the first article is a medical housing and the second article is a medical tubing.

30. The method of claim 21, wherein the first article is a medical tubing and the second article is a medical tubing.

31. The method of claim 21, wherein the first article is a film and the second article is a flanged port.

32. The method of claim 21, wherein the first article is a sealed container and the second article is a flanged port.

33. The method of claim 32, wherein the sealed container is filled with a solution.

34. The method of claim 33, wherein the solution is a medical solution.

35. The method of claim 21, further comprising the step of:

providing a shield which fits over a portion of the interface area, the shield allowing infrared exposure to reach the interface area while protecting a non-bonding area.

36. The method of claim 35, wherein the shield is made of glass.

37. The method of claim 35, wherein the shield is made of polytetrafluoroethylene.

38. The method of claim 37, wherein the shield includes multiple slots arranged along an axis for allowing the infrared light to reach the interface area and provide multiple sealing areas.

39. The method of claim 21, wherein the bonding step is performed using infrared lamps.

40. The method of claim 21, wherein the bonding step is performed using a laser.

41. A method for assembling a medical device comprising the steps of:

providing a first article of a polymeric material;

providing a second article of a polymeric material;

applying an infrared absorbing pigment to the first article and the second article to define an interface area;

contacting the first article with the second article along the interface area; and

bonding the first article to the second article along the interface area using infrared exposure.

42. The method of claim 41, wherein the first article is a medical tubing and the second article is a medical tubing.

43. The method of claim 41, wherein the infrared absorbing pigment is blended with the polymeric material from which the first article and the second article are derived.

44. The method of claim 41, wherein the infrared absorbing pigment is printed on the first and second article.

45. The method of claim 41, wherein the infrared absorbing pigment is placed on a first portion of a surface of the first or second article in a first concentration and in a second portion of the surface in a second concentration lower than the first concentration..

46. The method of claim 45, further comprising the step of applying a first infrared exposure to the first portion of the surface to create a seal.

47. The method of claim 46, further comprising the step of applying a second infrared exposure higher than the first infrared exposure to the second portion of the surface to create a second seal.

48. The method of claim 41, further comprising the step of: providing a shield which fits over a portion of the interface area, the shield allowing infrared exposure to reach the interface area while protecting a non-bonding area.

49. The method of claim 48, wherein the shield is made of polytetrafluoroethylene.

50. The method of claim 49, wherein the shield includes multiple slots arranged along an axis for allowing the infrared light to reach the interface area and provide multiple sealing areas.

51. A method for assembling a medical device comprising:
providing a first article of a polymeric material;
providing a second article of a polymeric material;
providing an infrared responsive pigmented film;

placing the infrared responsive pigmented film between the first article and the second article to define an interface area and contacting the first article with the second article; and

applying infrared exposure to bond the first article and the second article.

52. The method of claim 51, wherein the first article is a flanged port and the second article is a film.

53. The method of claim 51, wherein the first article is a sealed container and the second article is a flanged port.

54. The method of claim 53, wherein the sealed container is filled with a solution.

55. The method of claim 54, wherein the solution is a medical solution.

56. The method of claim 51, further comprising the step of providing a protective shield which fits over a portion of the interface area, the shield allowing the infrared exposure to reach the interface area while protecting a non-bonding area.

57. The method of claim 56, wherein the shield is made of polytetrafluoroethylene.

58. The method of claim 57, wherein the shield includes multiple slots arranged along an axis for allowing the infrared light to reach the interface area and provide multiple sealing areas.

59. A medical device assembly comprising:

a first article of a polymeric material;

a second article of a polymeric material;

the first or second article having an infrared absorbing pigment disposed thereon to define an interface area, the first article being contacted with the second article at the interface area; and

a protective shield temporarily placed over at least a portion of the interface area, such that when infrared heat is applied to the interface area a bond is formed between the first article and the second article.

60. The medical device assembly of claim 59, wherein the first article is a medical tubing and the second article is a medical housing.

61. The medical device assembly of claim 59, wherein the first article is a medical tubing and the second article is a medical tubing.

62. The medical device assembly of claim 59, wherein the first article is a film and the second article is a flanged port.

63. The medical device assembly of claim 59, wherein the first article is a sealed container and the second article is a flanged port.

64. The medical device assembly of claim 63, wherein the sealed container is filled with a solution.

65. The medical device assembly of claim 64, wherein the solution is a medical solution.

66. The medical device assembly of claim 59, wherein the shield is made of polytetrafluoroethylene.

67. The medical device assembly of claim 66, wherein the shield includes multiple slots arranged along an axis for allowing the infrared light to reach the interface area and provide multiple sealing areas.

68. The medical device assembly of claim 59, wherein the infrared absorbing pigment is placed on a first portion of a surface of the first or second article in a first concentration and in a second portion of the surface in a second concentration lower than the first concentration.

69. The medical device assembly of claim 59, wherein the infrared absorbing pigment comprises carbon black.

70. The medical device assembly of claim 59, wherein the infrared absorbing pigment comprises activated charcoal.

71. The medical device assembly of claim 59, wherein the infrared absorbing pigment is blended with the polymeric material from which the first article and the second article are derived.

72. The medical device assembly of claim 59, wherein the infrared absorbing pigment is printed on the first or second article.

73. A medical device assembly comprising:

a first article of a polymeric material;

a second article of a polymeric material;

the first and second article having an infrared absorbing pigment disposed thereon to define an interface area, the first article being contacted with the second article at the interface area; and

a protective shield temporarily placed over at least a portion of the interface area, such that when infrared heat is applied to the interface area a bond is formed between the first and second article.

74. The medical device assembly of claim 73, wherein the infrared absorbing pigment is blended with the polymeric material from which the first article and the second article are derived.

75. The medical device assembly of claim 74, wherein the infrared absorbing pigment is printed on the first or second article.

76. A medical device assembly comprising:

a first article of a polymeric material;

a second article of a polymeric material;

either the first or second article having an infrared absorbing pigment disposed thereon to define an interface area, the first article being fixedly attached to the second article at the interface area by applying infrared exposure.